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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,036	12/09/2003	Sung-Gi Kim	Q77352	3027

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EXAMINER	
KOVAL, MELISSA J	

ART UNIT	PAPER NUMBER
2851	

DATE MAILED: 06/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/730,036	KIM ET AL.	
	Examin r	Art Unit	
	Melissa J Koval	2851	

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-9 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-7 is/are rejected.

7)☒ Claim(s) 8 and 9 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 09 December 2003 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "curvature in a width direction" as set forth in claim 7, "curvature in a height direction" as set forth in claim 8, and "curvature in both a width and a height direction" as set forth in claim 9 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the

changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim 1 is objected to because of the following informalities: In line 4 of claim 1, applicant may want to change the phrase "magnifying emitting light" to - - magnifying emitted light - - to improve the grammar and readability of the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Monson et al. ('012 B1).

Refer to Figure 1 of Monson et al. ('012 B1), for example.

Claim 1 sets forth: "A projection display apparatus, comprising:

a plurality of light sources (three rear screen projectors 11, 12 and 13 by definition comprise a light source(s). View Figure 1 with light rays La, Lb and L1 through L3 shown therein.);

a projection lens disposed in front of each of the plurality of light sources for magnifying emitting light from the plurality of light sources (three rear screen projectors 11, 12 and 13 by definition comprise a projection lens disposed in front of a light source(s) for magnifying the light as claimed. Again, view Figure 1 with light rays La, Lb and L1 through L3 shown therein.); and

a screen having a predetermined curvature to control a view distance and focus the light rays projected from the projection lenses, wherein the curvature is convex on a side of the screen opposite to the plurality of light sources (See curved display screen 15. Also refer to column 1, lines 18 through 30, the 'SUMMARY OF THE INVENTION', column 3, lines 62 through 67, and column 4, lines 1 through 10.)."

Claim 6 sets forth: "The projection display apparatus as claimed in claim 1, wherein the view distance is minimized." Refer to column 2, lines 36 through 49 of '012 B1. The distance of the viewer to the screen is discussed therein. Also refer to column 3, lines 62 through 67 of '012 B1. As it is the intent of Monson et al. to keep the magnification factor at 1x, rather than enlarging the image, the viewer therefore can remain close to the viewing screen. Clearly an operator seated at a viewing chair in front of an operator station must remain at a comfortable distance from the screen as determined by the image magnification.

Claims 1 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Starkweather ('113 A1).

Refer to Figure 1 of Starkweather, for example.

Claim 1 sets forth: "A projection display apparatus, comprising:

a plurality of light sources (Refer to three electronic projectors 12A, 12B and 12C. Also refer to section [0012] wherein the following is taught: "Electronic projectors 12 are well-known in the art and may employ any of a variety of electronically-controlled display technologies including liquid crystal displays, digital micro-mirrors (e.g., DLP™ digital light processing light controllers available from Texas Instruments Incorporated), etc., together with appropriate projection optics.".);

a projection lens disposed in front of each of the plurality of light sources for magnifying emitting light from the plurality of light sources (Refer to three electronic projectors 12A, 12B and 12C. Again refer to section [0012].); and

a screen having a predetermined curvature (See curved display screen 14 and section [0015 in its entirety. Because the screen is concave relative to the viewer, the screen is convex relative to any projectors in a rear projection system.) to control a view distance and focus the light rays projected from the projection lenses, wherein the curvature is convex on a side of the screen opposite to the plurality of light sources." Refer to Figure 1 and to section [0004] in its entirety, the last five lines of section [0005], and section [0018] in its entirety, for example. The distance of the viewer to the screen is discussed therein.

Claim 6 sets forth: "The projection display apparatus as claimed in claim 1, wherein the view distance is minimized." Again refer to Figure 1 and to section [0004] in its entirety, the last five lines of section [0005], and section [0018] in its entirety, for example. In particular, refer to the concept of immersion. The examiner interprets this to mean that the viewer is so minimally distant from the screen that the viewer feels absorbed by the images he or she watches.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Starkweather ('113 A1) in view of Hirata et al. ('814).

Claim 2 sets forth: "The projection display apparatus as claimed in claim 1, wherein the plurality of light sources are red (R), green (G), and blue (B) light sources."

Claim 3 sets forth: "The projection display apparatus as claimed in claim 2, wherein the plurality of light sources are monochromatic cathode ray tubes (CRTs)."

Starkweather shows all of the elements set forth in claims 2 and 3, however Starkweather discusses the type of projectors used in general terms, implying that the three electronic projectors 12A, 12B, and 12C comprise the components for color

systems without using the notoriously well-known terms of the art, i.e. "red, green and blue". Refer to section [0003] of Starkweather, for example. All of the trademarked projectors referred to therein are available as color projectors. Furthermore, Starkweather does not specifically refer to "cathode ray tubes (CRTs)" in his teaching. However, refer to section [0002] of Starkweather. Television displays are specifically referred to therein. It is well-known in the art that television systems comprise cathode ray tubes as evidenced by Hirata et al., for example.

Hirata et al. ('814) show systems in their Figures 1 and 2, respectively, that are analogous to the Prior Art disclosed by applicant in applicant's own Figure 1. See column 2, lines 20 through 65 of '814, wherein red, green and blue cathode ray tubes 7R, 7G, and 7B are discussed.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use either red, green and blue light sources for the plurality of light sources claimed in claim 1, thus meeting the limitations of claim 2; or cathode ray tubes for the plurality of light sources claimed in claim 1, thus meeting the limitations of claim 3. The motivation for one having ordinary skill the art to make either selection would be found in the teaching of Starkweather. Again, refer to section [0012] of Starkweather wherein the following teaching is found: "Electronic projectors 12 are well-known in the art and may employ any of a variety of electronically controlled display technologies...".

Claims 4, 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Monson et al. ('012 B1) in view of Dubin et al. ('830 B1).

Refer to Figure 2 of Monson et al. ('012 B1), for example. Also refer to column 3, lines 1 through 5, of '012 B1 wherein Fresnel lens 14 is discussed.

Claim 4 sets forth: "The projection display apparatus as claimed in claim 1, wherein the screen includes:

a Fresnel screen having a certain curvature to convert the light rays incident from the projection lenses to have predetermined optical directional characteristics in an optical axis direction (See column 3 lines 1 through 61.), and

a Lenticular screen disposed in front of the Fresnel screen and having a curvature corresponding to the Fresnel screen, and for forming images from the light rays passing through the Fresnel screen, controlling a view angle, and enhancing an entire screen luminance."

Monson et al. do not specifically use the word "lenticular" in their teaching and are silent as to the composition of curved display screen 15.

Dubin et al. ('830 B1) teach in their "BACKGROUND OF THE INVENTION" that rear projection screens are well-known in the art for both CRT and LCD technologies, said rear projection screens comprising both Fresnel and lenticular surfaces. Refer to Figures 1A and 1B of Dubin et al., for example. Therein projection screen 14 is shown comprising two lenticular surfaces 15 and 16 adjacent Fresnel lens 13. Refer to column 2, lines 11 through 16 of '830 B1, wherein the effects of the presence of the lenticular surfaces on the projection system are discussed. Dubin et al. also teach an embodiment

wherein the lenticular surface is curved. See Figure 11G, for example. The teaching beginning in column 2, lines 61 through 67, of '830 B1 and continuing onto column 3, lines 1 through 6, suggest that a curved Fresnel screen would also be required for that embodiment.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a curved lenticular screen, based on the teaching of Dubin et al., for the screen 15 shown by Monson et al. thus meeting the limitations of claim 4. The motivation for one having ordinary skill in the art to make such a selection would be to control the amount of scatter in the direction normal to the lenticular axes. See column 2, lines 11 through 16, of Dubin et al. ('830 B1). Furthermore luminance efficiency may be of high importance. See column 3, lines 7 through 15 of '830 B1. It is also an object of the invention of Monson et al. ('012 B1) to contain luminosity differences in different portions of the screen. See column 2, lines 18 through 27.

Claim 5 sets forth: "The projection display apparatus as claimed in claim 4, wherein the view distance is determined based on a focal length of the Fresnel screen and a curvature radius of the Fresnel screen." Monson et al. discuss radius of curvature of the Fresnel screen with respect to the viewing axis in column 3, lines 6 through 24. The focal length always determines the view distance.

Claim 7 sets forth: "The projection display apparatus as claimed in claim 4, wherein the Fresnel screen has a curvature in a width direction."

The screens of both Monson et al. ('012 B1) and Dubin et al. ('830 B1) appear to be curved in a width direction. Again refer to Figures 1 and 2 of Monson et al. and Figure 11G of Dubin et al.

Allowable Subject Matter

Claims 8 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record neither shows nor suggests a Fresnel screen comprised by a projection display apparatus having all of the limitations of claim 4 and having a curvature in a height direction as claimed in claim 8. The prior art of record does not show or suggest a Fresnel screen comprised by a projection display apparatus having all of the limitations of claim 4 and having a curvature in both a width and a height direction.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hall Jr. et al. U.S. Patent 6,639,631 B1 teaches a projection television using a holographic screen.

Yamaguchi et al. U.S. Patent 6,665,118 B2 teaches a rear-projection screen and rear-projection image display.

Neff et al. U.S. Patent 6,623,120 B2 teaches a video projection system and design method therefor.

Takahashi U.S. Patent Application Publication US 2004/0090674 A1 teaches a composite lenticular lens sheet and projection screen.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa J Koval whose telephone number is (571) 272-2121. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571)272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MELISSA JAN KOVAL
6/9/04